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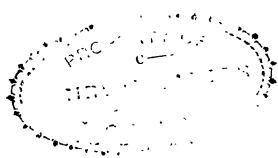


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CHARLES RIVER POLLUTION.

INVESTIGATIONS

MADE BY THE

— ~~ENGINEERING DEPARTMENT,~~ T,

With Compliments of

William Jackson,

City Engineer.



BOSTON:

ROCKWELL AND CHURCHILL, CITY PRINTERS.

1893.

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HON. NATHAN MATTHEWS, JR.,

Mayor of the City of Boston.



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FEBRUARY 1, 1893.

The following are extracts from the Twenty-Fifth Annual Report of the Engineering Department, Boston, for the year 1892.

WILLIAM JACKSON, *City Engineer.*

CHARLES RIVER POLLUTION.

In September and October, 1892, at the request of your Honor, an examination of the Charles River was made, to ascertain the nature and location of the sources of its pollution. Previous examinations of a similar nature had been made by the State Board of Health (see Report dated January, 1876), and by the Massachusetts Drainage Commission (see Report of 1886).

The sources of pollution found, and a few others, information concerning which was obtained by correspondence with the local boards of health, are given in the list which follows:

The list contains also a number of drains from manufacturing establishments, etc., which were not found to be contaminating the river, but of which a record is of interest. Factories in course of construction, or those which have adopted means of preventing pollution, and sewers and drains which have been abandoned, or which discharge nothing but storm water, are included in the latter category. Where pollution was observed, its nature is shown in the fifth column of the table; and where no pollution was observed, the fifth column is left blank.

Several of the establishments and drains which were polluting the river when the examination was made have since ceased to do so. This is the case especially in Waltham and Watertown, where the discharge has, in many cases, been diverted into the local sewers which flow into the South Metropolitan system. Other pollutions will probably be diverted from the river in a few months. In either of these cases, if the fact is known to this department, it is noted in the column headed "Remarks added January, 1893."

In cases where it is known that the State Board of Health has discussed means of stopping the pollution, reference to their discussion is made in the same column, which contains also in some cases a note as to the obvious course to be pursued in putting an end to the pollution.

Sources of Pollution of Charles River and its Tributaries, October, 1892.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
1...	Milford	Central st.	Sewage		Pollutes the river badly . .	
2...	"	Main st.	Sewage		Flows into bed of stream below dam, where there is but little current except in wet weather; makes river very dirty,	
3...	"	Cedar-swamp Pond,	Privies and drains of 12 dwellings		Discharge into Cedar-swamp Pond	
4...	"	"	Green Bros., bleachery	12	Use dry privies. Bleach leather and clean carpets,	Systems of sewage disposal for Milford are discussed in State Drainage Report (1896), p. 176.
5...	"	Below Main st.	Discharge from privies and house drains		Discharge into stream and raceway below Main-st. sewer	
6...	"	"	Waste liquor from gas making		Liquor dark and bad smelling	
7...	"	"	. . . . .	. . . . .	Below Central st. the river is very shallow and almost dammed up with deposits from mills and sewers above	Since October the river at Milford village is said to have been cleaned out and straightened.

8. . . .	"	Central st.	Milford Shoe Co.	Water-closets, and dust and scrapings of leather	600	Factory directly over the river
9. . . .	"	North of Central st. . . .	Green Bros., heel manufacturers and renderers of scrap leather	Liquor from rendering vats . .	200	Use dry privies. The liquor from the vats is offensive
10. . . .	"	South of Central st. . . .	Small brook or drain	Sewage from several private residences and Eastman's box factory		Employees of Milford Shoe Co. are troubled by bad smells from this brook
11. . . .	"	$\frac{1}{4}$ mile below Central-st. bridge	Clapp, Huckings, & Temple, shoe shop	Overflow from cesspool	350	Cesspool receives all factory waste, including drainage from water-closets
12. . . .	"	$\frac{1}{4}$ mile below Central-st. bridge	Electric Car Manufactory . .			In course of construction near river. No plan as yet for sewage disposal, Rebuilding — will employ about 5 hands.
13. . . .	Bellingham	Bellingham	Shoddy mill of Norfolk Woollen Co.	Privies, waste water from wool-scouring and spent-dye-liquor	130	
14. . . .	"	North Bellingham,	Ray Woollen Co.	Privies, waste water from wool-scouring, and spent-dye-liquor	105	Very little wool is scoured.
15. . . .	"	Caryville	Taft-McKean Woollen Co. . .	None observable		Run only part of the year.
16 & 17	"	Between North Bellingham and Caryville	Two saw-mills	Privies, spent dyes, and all waste matter	60	Scour some wool, but not so much as formerly. The pollution here is a cause of complaint at Ray & Wilson's mill below .
18. . . .	Medway	West Medway	Medway Woollen Co.			No wool is now scoured at this mill.

Systems of sewage disposal for Milford are discussed in State Drainage Report (1896), p. 176.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
19 . . .	Medway . . .	West Medway . .	Ray & Wilson Mfg. Co., cotton wadding	Waste from dye vats	15	Use dry privies. No washing or scouring done. Dye vats drained into river once a month.	
20 . . .	Franklin . . .	Franklin	Saxon Worsted Co.	Privies, wash water, and spent dye	185	Discharge into a brook which runs into Mine Brook	
21 . . .	"	"	H. T. Hayward, satinet mill .	Privies, wash water, and spent dye	45	Discharge into a brook which runs into Mine Brook. No wool scoured here	
22 . . .	"	"	Ray Cassimere Mill	A little waste water goes into brook	20	Use dry privies	Systems of sewage disposal for Franklin are discussed in State Drainage Report (1890), p. 181, and Health Board of Report for 1890, p 64.
23 . . .	"	"	Franklin Knitting-mill	Privies and waste water . . .	45	Discharge into the brook which runs into Mine Brook	
24 . . .	"	"	Ray Woollen Co.	Privies and waste liquor from scouring and dyeing	160	Discharge into the brook which runs into Mine Brook	
25 . . .	"	Near W.W. Pumping-station . .	Ray's Rubber Works	Waste water from washing gum	200	Use dry privies. Waste water runs in a covered drain, and through a meadow into Mine Brook. Very offensive	

26 . . .	" . . .	Unionville . . .	F. B. Ray, woollen mill . . .	Privies and waste liquors, from wool scouring and dyeing	about 35	Scour 20,000 lbs. wool per year. Dye 150,000 lbs. Water below mill is dark red, and pond is almost filled with black mud.
27 . . .	" . . .	" . . .	Franklin Cotton Mills, twine and cord	Privies	20	Mill and privies directly over water.
28 . . .	" . . .	Franklin . . .	Dean Academy	Sewage of 100 pupils		Drain leads into a swamp.
29 . . .	" . . .	" . . .	E. P. Bassett & Sons, hat factory	Sewage		Discharge into Dean Academy drain.
30 . . .	Norfolk . . .	City Mills . . .	City Mills Co., felt	Privies and waste liquors from wool scouring and dyeing	88	150,000 lbs. wool scoured yearly.
31 . . .	" . . .	About 1 mile above City Mills . . .	J. C. Wall's paper-mills . . .	Small amount of waste dye	6 to 8	Use earth privies.
32 . . .	Wrentham . .	Near Whiting's Pond	Two small shoddy-mills . . .	Privies and waste liquor, including vitriol	12	
33 . . .	Mills	Rockville	P. A. Waite, felt mill	Waste water from washing and dyeing and a little scouring	25	Use dry privies.
34 . . .	"	"	Baltimore Paper Co.	Waste from a very little washing	7	Use earth privies.
35 . . .	Norfolk . . .	Norfolk	Ray's shoddy-mill	Vitriol and waste from disintegrated rags, and waste dye-liquor	30	Effluent looks like ink. Drains into Stop River.
37 . . .	"	Highland Lake . .	Picnic ground			Several thousand people congregate here at times. One of the privies is on the bank of the pond.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
38 . . .	Norfolk . . .	Highland Lake . .	Campbell's paper-mill	3 or 4	Not running at present. Does but little business. Makes coarse paper without bleaching or color.	
39 . . .	Medfield . . .	Medfield	Filter bed for sewage from straw shops		{ Filter bed not well cared for, but does not cause nuisance. — Receives wasteliquor from dyeing, and also sewage of 800 operatives. See Jour. Ass. Eng. Soc., July, 1888, p. 235, also Mass. State Board of Health Report for 1887. No pollution of stream was observed.	
40 . . .	"	"	Straw shops	800		
41 . . .	Holliston . . .	Holliston	Boot factory	15	Privy	
42 . . .	"	"	Two large livery-stables		Stable drainage	
43 . . .	"	"	Several house-drains & privies,		House drainage	
45 . . .	"	East Holliston . .	Clark's blanket-mill	80	Waste water from washing wool and making shoddy . .	Makes blankets of wool, and of wool and shoddy — colored and natural. Pollutes Boggistere Brook badly.
46 . . .	Natick	South Natick . . .	Privy near mill-pond		Overflow from privy	Privy at top of steep bank about 100 feet from pond — other privies in vicinity are not allowed to overflow.

47 . . .	Wellesley . .	Near Waban Lake,	Henry Woods' Sons & Co. paint mill		40	The bed of the tail race is highly colored by a considerable deposit of sediment. Vitriol, chrome ores, and litharge said to be used.
48 . . .	" . .	" . .	Stone hall, a part of Wellesley College	Sewage of about 117 persons		The sewage runs into a cesspool, from which the solids are occasionally cleaned out. The liquid portion runs through a pipe into a small filter-house where it is strained through peat. The strained liquid runs into Waban Brook
49 . . .	" . .	" . .	Wellesley College filter-bed . .			About 1.5 acres artificially graded receive sewage of three of the college buildings, including the kitchen and laundry building. This bed serves about 450 students, etc.
50 . . .	Needham . .	Charles River Village	Waban Paper-mills	Water from washing old rags, also lime, soda ash, bleaching-powder, alum, and colors,	6 or 7	Makes colored wrapping-paper.
51 . . .	Dedham . .	Near cut-off ditch .	Sink drain	Sink drainage		Runs into river.
52 . . .	" . .	Dedham Village .	Sink drain	Sink drainage		Runs into brook from Wigwam Pond.
53 . . .	" . .	" . .	Cesspool of house of Mrs. J. W. Clark	Overflow from cesspool		Runs into brook from Wigwam Pond.
54 . . .	" . .	" . .	County jail			The sewage of the jail runs into a filter-bed on the Waring System.

The college authorities do not intend to connect "48" with "49," but they may, perhaps, build a new filter-bed for "48."

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
55 . . .	Dedham . . .	Near Spring-street Bridge	House of Mrs. Shorrey, rag washer	Water from rag washing		Water collects in pools about the house, to be washed into the river when it rains.	
57 . . .	Newton . . .	Upper Falls . . .	Pettee's Machine Co.		400	Use cesspools. Some oily substance fouls the race-way.	
58 . . .	" . . .	" . . .	Nelson Chemical Co.	A little rinsing-water.			
59 . . .	" . . .	" . . .	Phipps & Train, silk mills . .	Privy, also a little aniline dye and soap	175	Privy over river for office employees. Employees in main works use cess-pools.	
60 . . .	" . . .	" . . .	Hickey's paper-mill			Not running at present.	
61 . . .	" . . .	" . . .	Newton Rubber Co.		75	Cesspool within 10 feet of river.	
63 . . .	" . . .	Lower Falls . . .	Orehore's paper-mill, press paper	A little bleaching-powder . .	12	Water-closets drain into vaults.	
64 . . .	" . . .	" . . .	Cordingley's shoddy-mill . . .	Waste from disintegrated rags,	25	Water-closets drain into vaults.	
65 . . .	" . . .	" . . .	Wiswall paper-mill	A little lime, soda-ash, bleaching-powder, alum, and very little chromate and prussiate of potash	6	Cesspool 15 feet from river.	

66 . . .	" . . .	" . . .	Mrs. Boury's 2-tenement house.			Privies on steep bank, 40 feet from river. Leaky near the top. Hoghead for sink water.
67 . . .	Needham . . .	Highlandville . .	Union Cycle Mfg. Co.	Privies	180	Privies discharge into Rosemary Brook
68 . . .	Wellesley . .	Lower Falls . . .	Dudley Hosiery Co.	Privies, also suds from washing completed garments . .	120	7,000 to 8,000 lbs. wool used weekly.
69 . . .	" . . .	" . . .	Adam Beck's machine-shop .	Privy	10	No manufacturing waste gets into river.
70 . . .	" . . .	" . . .	R. B. Bishop's paper-mill . .	Water-closet drainage. Some waste dye		Not now running — when running full time, employs 25 hands. Uses wood pulp.
71 . . .	" . . .	" . . .	R. T. Sullivan, shoddy mill . .	Privies, also vitriol and waste from disintegrated rags . . .	38	Uses about 5,000 lbs. rags daily, of which 5% is waste, and 30 to 40 carboys of vitriol monthly.
72 . . .	" . . .	" . . .	Billings, Clapp, & Co., chemical works	Water from washing bottles .	12	Privy is over a vault which is cleaned out regularly. No waste chemicals enter the river.
2A . .	Weston . . .	Riverside	Privy near R.R. bridge	Privy.		
73 . . .	Waltham . . .	Roberts	William Roberts' paper-mill .		25	Makes only asbestos paper — waste water goes into a basin where liquids soak into the ground, and solids are cleaned out. Hands use earth closets.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
74 . . .	Waltham . . .	400 feet south of watch factory . .	Orange-street drain		Takes surface water from Orange st. and a small part of Crescent st.	
75 . . .	" . . .	Near watch factory	Robbins-street drain		Takes surface water from Robbins st.	
76 . . .	" . . .	Under " . . .	Old drain		Takes surface water from part of Brown st.	
77 . . .	Waltham . . .	Crescent st. . . .	American Waltham Watch Co.,	2,865	Water-closets drain into a cesspool from which the solids are frequently cleaned out; liquids at present overflow into river, but a pump has been bought for pumping the liquids into the sewer.	The pump is now in good working order; no sewage escapes to river.
78 . . .	" . . .	Prospect-st. Bridge	Crescent-st. drain		Takes surface water of Brown and Ash sts. and part of Adams and Crescent sts.	
79 . . .	" . . .	About 900 ft. east of Prospect-st. Bridge	Walnut-st. drain		Takes surface water of Walnut, Maple, and part of Crescent sts.	
80 . . .	" . . .	East of Moody-st. Bridge	Moody-st. drain		Takes surface water of Moody and Robbins sts.	

81. . . .	"	Moody-st. Bridge.	Upper Main-st. drain		Takes surface water of Moody Main, Common Grant, Bacon, Francis, Howard, Russell, and Hammond sts., also water of an unpolluted brook.	Will soon be connected with the Waltham Sewer.
82. . . .	"	Between Moody and Elm sts. . .	Boston Mfg. Co., cotton goods.	Discharge from water-closets .	1,250	A stream of water flows through water-closets and discharges into river.
83. . . .	"	Near Elm-st. Bridge	Felton-st. drain	Sewage from several water-closets and two meat-markets		Takes surface water of Carter Elm Water Works, Fountains and part of Charles-st., also sewage from F. R. R. Station, Pacemaker Block, and two meat-markets.
84. . . .	"	Opposite Boston Mfg. Co.	Lowell-st. drain	Drainage from wet cellars . .		Takes surface water of Lowell, Hall, and parts of Pine, Alder, Ash, and Brown sts.
85. . . .	"	Near branch R.R. .	Waltham Gas and Electric Light Co.			
87. . . .	"	Elm st.	W. A. Hunnewell's coal-yard.	Privy	12-15	Privy overhangs river.
88. . . .	"	"	American Watch Tool Co. . .	Discharge from water-closets .		This now drains into the Waltham sewer.
89. . . .	"	Newton-st Bridge,	American Laundry Co.	Chloride of lime and dirty water from washing clothes,	25	Now connected with sewer.
90. . . .	"	"	Newton-st. drain	The waste from laundry (89) reaches river through this drain		No. 90 now receives no drainage from laundry.

NOTE.—The Waltham Board of Health estimates that about 70 houses drain their sewage into the surface-water drains on the south side of the river. The Inspectors of the Board are now engaged in finding out which these houses are, in order that the practices may be stopped. [December, 1892.] About one-half of these houses have been connected with the Waltham sewers since October.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
91 . . .	Waltham . . .	Main st. and Beaver Brook . . .	Lower Main-st. drain		. . .	Conveys to Beaver Brook the surface water from Pleasant, Harris, Cross, and Liberty sts. and part of Main st.	
92 . . .	"	Lower R.R. bridge,	Calvary-st. drain		. . .	Takes surface water from Moore, Oak, Acorn, Cedar, and Bolton sts. and a part of Calvary st.	
93 . . .	"	700 ft. above Farwell-st. Bridge.	Atlas Chemical Works, sulphuret of antimony	Dilute sulphate of soda	3	No privy; 6,000 lbs. of vitriol and 3,900 lbs. of caustic soda used weekly.	
94 . . .	"	700 ft. above Farwell-st. Bridge.	Brook	Matter taken from cesspools	. . .	This brook runs through the field where is dumped the filth cleaned out from the cesspools of Newton, part of which gets into brook.	
95 . . .	"	Bleachery sta. . .	Waltham Bleachery and Dye Works	Water-closets and privies, also waste from bleaching and dyeing	260	Privies overhang river, water-closets drain by pipes into river. Use 6,500 lbs. soda-ash and 3,500 lbs. chloride of lime weekly.	Will soon be connected with sewer.
96 . . .	Newton . . .	Farwell st.	Houses of Mr. Farwell	Privy and sink drainage		Privy of one family has chute into river. Sink drainage of three families goes into river.	

97...	"	Nonantum, near bridge	Dr. Bemis' boarding house	Overflow from privy	...	Privy overflows into river	Will connect with sewer.
98...	"	Nonantum	Nonantum Mills (worsted)	Water-closet drainage and waste dye-liquor, etc.	550	Sewage reaches river by a pipe drain	Will connect with Metropolitan Sewer.
99...	"	Off California st.	Barker & Co., starch m'fy.	Sour waste containing gluten	10	Privy eight ft. from river. Waste liquor reaches river by an open ditch.	Will soon connect with Metropolitan Sewer.
100...	"	Newtonville	Brackett Coal Co., stable	Drainage from stable	...	Drain from stable enters laundry brook.	
102...	Watertown	Bemis	Ætna Woollen Mills	Water-closet drainage, water from wool washing and spent dye-liquor	240	Wash a large amount of wool	
103...	"	"	Indurated Fibre Co.	Water containing a little wood pulp	...	Waste water runs into a brook by which it reaches the river	These will soon enter the extension of the town sewer now being constructed.
104...	"	Near Bemis	Crystal Spring Mfg. Co., starch	Sour water containing gluten	10	Foul privy ten ft. from river bank. The sour water is very offensive.	
105...	"	Near Galen-st. Bridge	Six houses	Discharge from privies and sinks	...	Privies are over river	These houses now drain into tight vaults.
106...	"	Near Galen-st. Bridge	Hollingsworth & Whitney, paper	Privies and a little chloride of lime	125	" " "	
107...	"	Near Galen-st. Bridge	Lewando's Dye-house	Water-closet drainage and highly colored dye-liquor	150	Dye-house is over river	These will soon enter the town sewer; the work of making connections is now going on.
108...	"	Near Galen-st. Bridge	Walker & Pratt Mfg. Co., stoves	Privies and very small amount of acid	100-125	Privies are over river	
109...	"	Near Galen-st. Bridge	Watertown Grist-mill	Privy	8	Privy is over river	Will soon enter town sewer; connections partly made.
110...	"	Near Galen-st. Bridge	Block of buildings with stores,	Sewage	...	...	

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
111 . .	Watertown . .	Near Galen-st. Bridge	Dirty water from two laundries awill, etc.		This branch is foul. There are several privies a few feet from brook.	
112 . .	"	Near Galen-st. Bridge	Privy		Two stables near brook. Cesspool fifteen feet from brook. Privy over brook at M. Whitney's carpenter shop on Church st.	
113 . .	"	Near Galen-st. Bridge	Privy	6	Privy over river.	
115 . .	"	California st.	Sewage		Discharges all sewage into a brook which runs into the river	Will soon connect with town sewer.
116 . .	"	Morse's Pond		6	Open privy 6 ft. from pond.	
117 . .	"	Outlet of Morse's Pond	Privy		Privy over outlet from Morse's Pond	Will soon connect with town sewer.
119 . .	"	Galen st.	Sewage		Discharges sewage into river by 12-in. pipe just above Galen-st. Bridge.	Now connected with the town sewer.

120	"	Water st.	Warren Soap Mfg. Co.	Water-closet drainage and waste water	14	Discharges sewage into river by 4 in. pipe . .	Will soon enter the town sewer.
121	"	"	Newton & Watertown Gas Co.,	Privy	20	Uses cesspools for all privies and drains, except one privy	
122	"	"	Two-tenement house of D. O'Keefe	Privy and sink water	...	Privy over river	
123	"	"	Street drain . . . . .	... . . . .	...	Enters river by a 18-in. iron pipe under privy of "122."	
124	"	"	Watertown Starch Co.	Privy, also sour waste containing gluten	16	Privy over river—waste water is offensive; it enters river by four 6-in. pipes	Will soon enter the town sewer.
125	"	...	Stanley Dry Plate Co.	Water-closet drainage and wash water	16	Sewage enters river by wooden box 8-in. X 12-in.	
126	"	...	Elliot Cycle Co.	Water-closet drainage and wash water	150	Sewage enters river by 6-in. iron pipe	Will soon enter the Metropolitan sewer.
127	Newton	...	Hyde Brook	Privy and drainage of a two-tenement house	...	Brook runs under a barn, under which the drain and privy discharge. The cows have been removed from this barn by order of Board of Health.	
128	"	...	Mrs. Parker Emerson's residence . . . . .	... . . . .	...	Cesspool formerly discharged through the ground into the river. The construction of the Metropolitan Sewer cut off this underground drainage, making overflow probable.	

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
129 . .	Newton . .		Overflow from cesspool		Liquid from cesspool overflows and runs on surface of ground into river.	
131 . .	Watertown . .	Arsenal st.	Some domestic sewage and part of drainage of Union Market		This drain was built for surface drainage, but some houses have made connection with it.	
132 . .	" . .	Near Union Market Station	Drainage from two houses and part of the Union Market drainage.			
133 . .	" . .	Near Union Market Station	Cattle-yard washings		2,000 to 4,000 cattle here; manure collected and sold, but when it rains a large amount of barn-yard washings goes into the drains which lead to "131" and "132."	
134 . .	" . .	Near Union Market Station	Drainage from privy	8		
135 . .	" . .	Near Union Market Station	Box drain for street water only.			
136 . .	" . .	Near Union Market Station	Street drain		A few houses have connections with this drain.	

137 . .	"	Near N. Beacon Bridge	8-in. pipe from Watertown arsenal	Sewage.	.....	No discharge when observed.	
138 . .	"	Near N. Beacon Bridge	24-in. stone drain from arsenal foundry . . . . .	.....	.....	The filth from this privy is partly washed into the river when it rains.	
139 . .	"	Off Arsenal st.	Privy on edge of marsh	Washings from privy . . . . .	.....	Privy over edge of river.	
140 . .	"	Near Western-ave. Bridge	Privy in coal yard	Privy	5 or 6		
142 . .	Boston (Brighton)	Faneuil	Faneuil sewer	Sewage of 15 houses.	.....		
143 . .	"	Near Abattoir	N.E. Dressed Meat & Wool Co.,	Water from washing sheep-skins . . . . .	.....	Wash 12,000 skins (with wool on) per week. Water-closet drainage goes into cesspool . .	Will probably enter Metropolitan Sewer by April, 1893.
144 . .	"	"	Sewer from N. Beacon and Parsons sta.	Sewage . . . . .	.....	Has outlet in common with "143" and "145."	
145 . .	"	"	Brook from Strong's and Chandler's Ponds	Drainage from several houses,	.....	Several houses on Tremont and Nonantum streets, near Oak square, pollute a branch of this brook	The Board of Health has sent notices to the owners of the houses.
146 . .	"	"	Boston Fresh Tripe Co.	Floor washings of tripe works,	.....	Three drains convey washings to river; said not to take any blood .	Will probably enter the Metropolitan by May, 1893.
147 . .	"	"	Brighton Abattoir	Blood and foul floor-washings,	.....	Seventeen drains lead to the river, the banks and bed of which are made very filthy and offensive	The dumping of rubbish behind the abattoir ought to be prohibited.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
148 . .	Boston (Brighton)	Wm. ave. Bridge,	Western-avenue sewer . . . .	.....	Outlet, 2 ft. × 3 ft. 4 in. .	[Dec., '92.] Now connected with Metropolitan Sewer.
149 . .	"	Near Western-ave. Bridge	Privies . . . . .	.....	Two privies over river.	
150 . .	"	Off Western ave.,	Privy for 8 men. Water-closet and sink-drainage of 4 families . . . . .	.....	Privy over river; pipe from water-closet and sink enters river just west of coal wharf.	
151 . .	"	Off Western ave., near Everett-st..	Sewage . . . . .	.....	Outlet, a 24 in. × 24 in. box sewer enters a foul ditch which flows into the river	Now connected with the Metropolitan Sewer.
152 . .	"	Near Western ave.,	Privy, water-closet, sink, and stable drainages . . . . .	.....	Several houses and stables north of Western avenue, and at Barry's Corner, and Grant street, drain into the river, on to the marsh, or into ditches in the marsh	
153 . .	"	Near North Harvard-st. Bridge .	Privy	2 to 8	Privy over river.	The Board of Health has sent notices to the owners.

154	"	Near Western- ava. Bridge . . .	Gillespie & Pierce, coal yard .	Privy and stable manure . . .	15	Privy over river. Stable on bank of small stream.
155	"	Above Cambridge- st. Bridge . . .	Small polluted stream . . .	Sewage of several houses . . .		The sewage reaches the small stream by an 8-in. box drain.
156	"	Below Cambridge- st. Bridge . . .	Brookline Gas Co.	Discharge from water-closet and sink	8	The sewage comes through a 6-in. iron pipe; an 8-in. pipe discharges nothing but water.
157	"	Beacon Park . . .	Drain from Beacon Park (12 in. X 24 in.)			Surface water only.
158	"	Near Beacon Park,	Allston sewer (36 in. X 38 in., wood)	Sewage		Runs into a foul stream which runs 600 or 700 ft. to the river
159	"	Near Cottage Farm,	Signal Tower No. 9, B. & A. R.R.	Sink drainage		Sink drainage enters river by a 6-in. pipe.
160	"	"	B. & A. R.R. Roundhouse . .	Water-closet and sink drain- age.		
161	"	Cottage Farm . .	Gate-tender's house, Essex-st. Bridge	Privy	1	Privy over river.
162	"	"	Factory and several houses . .	Sewage.		
163	Cambridge . .	Opposite Lowell st.,	Lowell-st. sewer	"		Two outlets, one 48-in. X 48-in., wood, and one 18- in. X 18-in., wood. Drains about 232 acres
164	"	"	Sewer opposite Maynard place,	"		Outlet, 22-in. X 22-in. wood.
165	"	Foot of Maynard st.,	Privy over river (stone yard) .	Privy	10	

{ Will probably be
connected with
Metropolitan
sewer by April,
1893.

† †

† A dagger indicates that the discharge in question will probably be diverted into the North Metropolitan Sewer soon after the latter is ready to receive sewage.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
167 . .	Cambridge . .	Opposite Sparks st.,	Sparks-st. sewer	Sewage		Outlet, 24-in. X 23-in. wood. Drains about 68.8 acres .	†
168 . .	" . .	Opposite Bath st. .	Bath-st. sewer	"		Outlet, 40½-in. X 52½-in. Drains about 246 acres .	†
169 . .	" . .	Opposite Willard st.	Willard-st. sewer	"		Outlet, 24-in. X 28-in. wood. Drains 21 acres	†
170 . .	" . .		Stable of Paving Department .			8-in. pipe and 4-in. pipe, relics of old gas-works; no discharge at present.	
171 . .	" . .	Opposite Brewer st.	Brewer-st. sewer			14-in. X 14-in. wood. Said to be disused.	
172 . .	" . .		Drain from marsh (18-in. X 16-in.)	Bad-smelling water.			
173 . .	" . .	Foot of Murray st.,	Privy over river	Privy		Used by about 20 persons.	
174 . .	" . .	" . .	Public dump.				
175 . .	" . .	" . .	Murray-st. sewer	Sewage		Outlet, 24-in. X 30-in. wood. Drains 62.3 acres	†
176 . .	" . .	250 ft. west of North Harvard-st. Bridge	8-in. X 10-in. box, draining marsh behind dike.				
178 . .	" . .	Opposite Dunster st.	Dunster-st. sewer	Sewage		Outlet, 24-in. X 26-in. Drains about 12 acres	†

179	"	"	Richardson & Bacon, coal wharf	Privies	Two privies over river. 18-in. ground drain enters river.	†
180	"	Opposite Charles-River st.	Charles River-st. sewer	Sewage	Outlet, 54-in. X 54-in. wood. Drains about 409 acres	†
181	"	West of Western-ave. Bridge	Sands-st. sewer	"	Outlet, 12-in. X 15-in. wood. Drains about 6 acres	†
182	"	Under Western-ave. Bridge	Western-ave. sewer	"	Outlet, 44-in. X 40-in., another 24-in. X 24-in. Drains about 114 acres	†
183	"	Blackstone st.	Riverside Press	"	Four waste-water pipes and ground drains. No serious pollution.	†
184	"	Off Pleasant st.	Pleasant-st. sewer	"	Outlet, 36-in. X 42-in. Drains about 92 acres	†
185	"	Opposite Pearl st.	Pearl-st. sewer	"	Outlet, 36-in. X 30-in. Drains about 64 acres	†
186	"	Under Brookline Bridge	Sewer	"	Outlet, 12-in. X 12-in. box. Drains a small area	†
187	"	Opposite Hamilton st.	Public sewer	"	Outlet, 36-in. X 42-in. Drains about 71 acres	†
188	"	Below Harvard Bridge near end of sea-wall	"	"	Outlet, 20-in. X 20-in.	†
189	"	"	Street drains from Main st.	"		
190	"	Near Brookline Bridge	Drain from Norcross Bros. stone-yard	Drainage of privies	Outlet, 15-in. X 15-in. wood.	†

† A dagger indicates that the discharge in question will probably be diverted into the North Metropolitan Sewer soon after the latter is ready to receive sewage.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
191 ..	Cambridge ..	Main st.	Privies	50	Privies overhang river.	
192 ..	" ..	"	Drainage from privies	50	Privies discharge into a tank which is flushed by the tide.	
193 ..	" ..	Broad Canal ..	Sewage	30	Sewage runs into canal by pipe.	
194 ..	" ..	"	"	40	Sewage runs into canal by pipe.	
195 ..	" ..	" ..	Privies	20-30	Two privies over canal.	
196 ..	" ..	" ..	Water-closet drainage and refuse vinegar	...	Drains into canal by an 8-in. box drain.	
197 ..	" ..	" ..	Sewage	200	The building is used by several tenants for wood working.	
198 ..	" ..	" ..	"		Said to drain into canal by pipes.	
199 ..	" ..	" ..	Privy.	160		
200 ..	" ..	" ..	Lime water.			
201 ..	" ..	" ..	Sewage	100	Sewage enters canal through a 10-in. pipe under Fourth-st. Bridge.	

202 . .	" . .	" . .	Stone yards north of canal . .			An 8-in. box drains the yards.	
203 . .	" . .	Between Broad, Canal, and Binney sts.	Dump			Flats behind sea-wall are being filled with ashes, refuse, etc.	
204 . .	" . .	Binney st.	Binney-st. sewer	Sewage		Outlet is a 96-in. X 84-in. box; drains about 853 acres	†
205 . .	" . .		Dugan Bros., stone works . .	Sink drainage		12-in. X 12-in. drain for waste water, etc.	
206 . .	" . .	South of Bridge st.	Public sewer	Sewage		Outlet, 18-in. X 24-in. wood; drains a small area	†
207 . .	" . .	Wharf south of Bridge st. . . .	8-in. box drain from ground behind blind wall.				
208 . .	" . .	On wharf west of Craigie's Bridge,		Privies.			
209 . .	" . .	Under Craigie's Bridge	Bridge-st. sewer	Sewage		{ The outlet is 100 in. X 96 in. wood. The discharge is very offensive. The apron, bridge-piles, etc., are covered with a greasy deposit. Takes sewage of about 33,000 people in Cambridge and Somerville; also the drainage of Squire's and North's packing-houses	†
211 . .	" . .	Under Prison-pt. Bridge	Sewer	Sewage		12-in. outlet	†
212 . .	" . .	Above Prison-pt. Bridge	Privy on wharf	Privy.			

† A dagger indicates that the discharge in question will probably be diverted into the North Metropolitan Sewer after the latter is ready to receive sewage.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
213 . .	Cambridge . .	Miller's River . .	Sewer overflow, 10 in. X 18 in.	.....	.....	Enters river at head of West End Ry. wharf. Formerly a sewer connecting with Squire's packing-house; now disused except as an overflow.	
214 . .	" . .	" . .	West End Ry., power house . .	.....	.....	A 10-in. pipe and a 30-in. pipe discharge warm water from condensers, etc.	
215 . .	" . .	" . .	Cambridge Sugar Refinery . .	.....	.....	A 30-in. iron pipe discharges water from condensers.	
216 . .	" . .	" . .	10-in. pipe, draining ballast and coal yard.	.....	.....		
217 . .	" . .	" . .	Wharf, west of Cambridge Sugar Refinery	Privy.			
219 . .	Boston, Rox..	Opposite St. Mary's st.	St. Mary's-st. sewer, overflow,	Storm overflow of sewer in St. Mary's st. . . . .	.....	The St. Mary's-st. sewer receives the sewage of Brookline. The ordinary flow runs into the South Metropolitan Sewer and so goes to Moon Island.	
220 . .	" . .	Off Commonwealth ave.	W. J. Sullivan, freestone cutting yard	Privy	76	Privy over river.	
221 . .	" . .	Off Commonwealth ave.	Crescent Boat-house	"			

222 . .	"	"	Off Bay State road,	Muddy-river Conduit (9 ft. X 11 ft.)			No. sewage now runs into Muddy River.
223 . .	"	"	Raleigh st.	House	House drainage		House drains into an old pipe-sewer which runs into river.
224 . .	"	"	45 Bay State road		Privy		Privy over river used by men at work on houses.
225 . .	"	"	Stony Brook	Three-tenement house, No. 80 Rogers ave.	Sink drainage		Sink drains enter Stony Brook by a leak in the wall
226 . .	"	"	"	Three-tenement house, No. 78 Rogers ave.	Water-closet and sink drainage		Sewage enters brook by an 8-in. pipe
227 . .	"	"	"	House, No. 17 Rogers ave. (one family)	Sink drainage		
228 . .	"	"	"	House, No. 16 Rogers ave.	"		Sink drains into brook by a 6-in. pipe
229 . .	Boston (Rox.)	"	Stony Brook	Three-tenement house, No. 15 Rogers ave.	Sink drainage		Sink-water drains into brook through a leak in the wall
230 . .	"	"	"	Three-tenement house, No. 15 Rogers ave.	Water-closet and sink drainage,		Sewage goes into brook by an 8-in. pipe
231 . .	"	"	"	Three-tenement house, No. 15 Rogers ave.	"		Sewage goes into brook by a 10-in. pipe
232 . .	"	"	"	House, No. 11 Rogers ave.	Sink drainage		
233 . .	"	"	"	Three-tenement house, No. 7 Rogers ave.	Water-closet and sink drainage,		Sewage goes into brook by a 10-in. pipe
234 . .	"	"	"	Six-tenement house, No. 6 Rogers ave.	"		Sewage goes into brook by a 6-in. pipe

The Street Department is making plans for a sewer to intercept the discharge from Nos. 226 to 230.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
235 . .	Boston (Box.).	Stony Brook . .	Three-tenement house, No. 5 Rogers ave.	Water-closet and sink drainage,	. . .	Sewage goes into brook by an 8-in. pipe	
236 . .	"	"	House, No. 3 Rogers ave. . .	Sink drainage	. . .	Sink water goes into brook by an 8-in. pipe	
237 . .	"	"	" " 2 " . . .	" " (one family) . . .	. . .	Sink water goes into brook by a 6-in. pipe. Privy is soon to be drained into brook	
238 . .	"	"	Three-tenement house, No. 11 Rogers ave.	Water-closet and sink drainage,	. . .	Sewage goes into brook by an 8-in. pipe	
239 . .	"	"	House, No. 1 Rogers ave. . .	Water-closet and sink drainage (one family)	. . .	Sewage goes into brook by an 8-in. pipe	
240 . .	"	"	Nos. 1, 2, 3, 4 Rogers court . .	Sewage of 13 families	. . .	Sewage goes into brook by a 10-in. pipe	The Street Department is making plans for a sewer to intercept the discharge from Nos. 225 to 289.
241 . .	"	"	Bay View place, 10-in. pipe sewer	Water-closet drainage of 16 families. Sink drainage of 23 families	. . .	Nos. 1, 2, 3, 4, 5, 7, 8, 9, and 11 drain into this 10-in. pipe	
243 . .	"	"	House, No. 69 Rogers ave. . .	Sink drainage	. . .	Leaks into brook through the wall	
244 . .	"	"	Repair-shop, B. & P. R.R. . .	Water-closet and sink drainage,	Abt. 125	Sewage goes into brook by a 6-in. pipe	
245 . .	"	"	Car-house, "	" " "	75	Sewage goes into brook by a 6-in. pipe	

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
287 ..	Boston (Box.),	Stony Brook . . .		Sewage.			
288 ..	" "	" " " "	Stony Brook place, 6 houses . Highland Foundry Co., 139- 106 Pynchon st.	Urine		Urine drains into brook.	
289 ..	" "	" " " "	City stable, Highland st. . . .	Drainage from dump and manure heap		Small brook runs from dump, etc., to Stony Brook (about 200 ft.). Brook is dark with manure.	
290 ..	" "	" " " "	Trimount Mfg. Co.	A very little oil.		This is a 3-ft. X 2-ft. 6-in. emergency storm-over- flow from "293" men- tioned below, into the new channel of Stony Brook. It is intended to be used only in emer- gencies.	
292 ..	" "	" " " "	Huntington ave. and Parker st., sewer overflow				
293 ..	" "	" " " "	Huntington ave. and Rogers ave., sewer overflow	Sewage from pipe sewers in Parker and Greenleaf sta., also storm overflow from 48- in. sewer in Huntington ave.		The ordinary flow of the Huntington ave. sewer is intercepted and goes to Moon Island, but the ordinary flow of the Parker and Greenleaf st. sewers goes into Stony Brook.	

294 . .	"	"	"	"	Huntington ave. and Rogers ave., sewer overflow	Storm overflow from 38-in. X 48-in. sewer in Huntington av. . . .	This overflow is of wood 16 in. square, and enters on the east side of the brook. The ordinary flow is intercepted and goes to Moon Island, but a few drains enter below the point of interception. Ordinary flow goes to Moon Island.
295 . .	"	"	"	"	Rogers ave. and B. & P. R.R., sewer overflow	Storm overflow from sewer in Ruggles st.	Ordinary flow goes to Moon Island.
296 . .	"	"	"	"	Tremont and Culvert sts., sewer overflow, east side . .	Storm overflow from 39-in. X 24-in. sewer in Tremont st.	Ordinary flow goes to Moon Island.
297 . .	"	"	"	"	Tremont and Culvert sts., sewer overflow, west side . .	Storm overflow from 48-in. X 32-in. sewer in Tremont st.	Ordinary flow goes to Moon Island.
298 . .	"	"	"	"	Culvert and Hampshire sts., sewer overflow	Storm overflow from 36-in. X 33-in. sewer in Hampshire st.	Ordinary flow goes to Moon Island.
299 . .	"	"	"	"	Downing and Vernon sts., sewer overflow	Storm overflow from 49-in. X 40-in. sewer in Vernon st.	Ordinary flow goes to Moon Island, but a few old drains enter below point of interception.
300 . .	"	"	"	"	Downing and Vernon sts., 15-in. pipe sewer	Sewage from three buildings	This was formerly a sewer outlet, but now the rest of the sewer is bulkheaded off.
301 . .	"	"	"	"	Elmwood st., sewer overflow .	Storm overflow from 48-in. X 39-in. sewer in Elmwood st.	Ordinary flow goes to Moon Island.
302 . .	"	"	"	"	Roxbury crossing, sewer overflow	Storm overflow from 24-in. X 36-in. sewer in Tremont st.	Ordinary flow runs into another sewer whence it goes to Moon Island.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1893.
303 ..	Boston (Rox.).	Stony Brook . . .	Pynchon st., sewer overflow .	Storm overflow from 48-in. X 30-in. sewer in Pynchon st. . .		Ordinary flow runs into another sewer whence it goes to Moon Island.	
305 ..	"	"	Pynchon and Cedar sta., 18-in. sewer overflow	Storm overflow from 18-in. sewer in Cedar st.		Ordinary flow goes by an 18-in. pipe into the Pynchon st. sewer, and so to Moon Island.	
306 ..	"	"	Pynchon and New Heath sta., 15-in. sewer overflow	Storm overflow from 20-in. X 16-in. sewer in New Heath st. .		Ordinary flow goes by a 9-in. pipe into the Pynchon st. sewer, and so to Moon Island.	
307 ..	"	"	Pynchon and Centre sta., 30-in. X 36-in. sewer overflow .	Storm overflow from 30-in. X 30-in. sewer in Centre st. . . .		Ordinary flow goes by a 10-in. pipe into the Pynchon st. sewer, and so to Moon Island.	
308 ..	"	"	Opposite Hoffmann st., 18-in. X 20-in. sewer overflow . .	Storm overflow from 35-in. X 27-in. sewer in Hoffmann st.,		Ordinary flow goes by a 10-in. pipe across the brook and into the Stony brook. Sewer in private land, and so goes to Moon Island.	

310 ..	Boston (W. Rox.)	"	"	Below Paul Gore st., 18-in. sewer overflow	Storm overflow from 18-in. sewer in private land . . . . .	.....	This 18-in. sewer was built as a relief to the sewer in Lamartine st.; the ordi- nary flow runs by a 12- in. pipe across brook into Stony-brook Sewer, and so to Moon Island.
311 ..	"	"	"	Boylston ave., sewer overflow,	Storm overflow from 64-in. X 42-in. sewer in Boylston ave.,	.....	Ordinary flow goes across the brook in an iron pipe, and so to Moon Island.
312 ..	"	"	"	Forest Hills sta., 24-in. sewer overflow	Storm overflow from 36-in. X 48-in. sewer in Washington st. . . . .	.....	Ordinary flow goes across the brook in two 20-in. pipes, and so to Moon Island.
313 ..	"	"	"	Muskat Village, 24-in. sewer overflow	Storm overflow from 36-in. X 48-in. sewer in Washington st. . . . .	.....	Ordinary flow goes across the brook in two 20-in. pipes, and so to Moon Island.
314 ..	"	"	Rosindale Branch of Stony Brook.	Washington and Kittredge sta., 28-in. X 42-in. sewer over- flow	Storm overflow from 28-in. X 42-in. sewer in Washington st. . . . .	.....	Ordinary flow goes by a 12-in. pipe into 36-in. X 24-in. sewer in Washing- ton st., and so to Moon Island.
317 ..	"	"	Stony Brook . . .	Boylston Brewery at Boylston sta.	Washings from engine-room.	.....	Only one urinal drains into brook; other fixtures drain into sewer.
319 ..	"	"	"	Sturtevant Blower Works, Ja- malca Plain	Urine and dirty water from washing castings (some vitricol) . . . . .	.....	

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Offenses.	Remarks.	Remarks added January, 1893.
320 . .	Boston (W. Rox.)	Stony Brook . . .		Waste dye-liquor		Waste liquor runs into cellar, whence some of it escapes into brook.	
321 . .	"	"	Boston Thread and Twine Co. Jamaica Plain	" " and seepage from tank,		The waste dye-liquor is turned into a small brook which joins Stony Brook near the Williams-st. Bridge. This small brook is very foul.	
323 . .	"	"	Richard Cochrane, 3771 Washington st., Forest Hills	Sink drainage		Sink drains into brook. Privy over vault 4 ft. from bank.	
324 . .	"	"	Michael McNulty, 3779 Washington st., Forest Hills			Privy over vault 15 ft. from brook. Sink drains into an old well.	
325 . .	"	"	James McGuire, stable, 3811 Washington st., Forest Hills,	Slight drainage from manure pile		Wooden drain from stable to brook.	
326 . .	"	"	House, cor. Spruce and Florence sts., Mt. Hope	Seepage from cesspool		Cesspool 10 ft. from brook.	
327 . .	"	"	Jere. Logue, two-tenement house, Spruce st.	Water-closet and sink drainage,		Drains into a cesspool which overflows into brook.	

329 ..	"	"	John Keefe, Spruce st. . . .	Stable drainage and overflow from cesspool	Drains into a small brook which runs into Stony Brook.
330 ..	"	"	A. P. Clarke, two-tenement house, Myers st.	Overflow from cesspool	Cesspool overflows into a small brook which runs into Stony Brook.
331 ..	"	"	Geo. Curtis, house on Neponset ave.	" "	Cesspool overflows into brook.
332 ..	"	Canterbury Branch,	House on Canterbury st., near brook	Drainage from privy.	
333 ..	"	"	Mrs. Noonan, Canterbury st. .	Overflow from cesspool.	
334 ..	"	"	Michael Norton, Walk Hill st.,	Sink drainage.	
335 ..	"	"	Three houses, cor. Canterbury and Walk Hill sts.	Cleanings from cesspools	Cleanings from cesspool are put in a hole near the brook, and a part gets into the brook.
336 ..	"	"	House on Canterbury st. . . .	Sink drainage.	
338 ..	"	"	House at cor. of Canterbury and Ashland sts.	" "	
340 ..	"	Roslindale branch of Stony Brook.	Washington st., Roslindale, street drain	House sewage	Three street drains enter the channel of the brook just below the house of Jesse K. Hiscock. One of these drains receives house sewage from a house farther up Washington st.
344 ..	Boston (Rox.)	Between Charlesgate W. and Charlesgate E. . .	Outlet of Back Bay Fens . . .	See 325-340	The pond in the Fens receives the flood discharge of Stony Brook.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.	Kind of Pollution entering Stream.	No. of Penalties.	Remarks.	Remarks added January, 1893.
345 . .	Boston (Rox.)	Between Charlesgate W. and Charlesgate E. . .	Outlet of Stony Brook (for ordinary flow)			
346 . .	Boston (City Proper).	Harvard bridge . .	Draw-tender's house		Privy over river; sink drain runs into river.	
347 . .	" "	Beacon st., between Hereford st. and Otter . .	About 133 houses and 39 stables		Drains run into the river .	The Street Department has been devising a sewer to intercept these discharges.
348 . .	" "	Opp. Hereford st.,	Hereford-st. sewer overflow (4-ft. X 5-ft., wood)			
349 . .	" "	" "	Old wooden culvert (24-in. X 42-in.)		Ordinary flow goes to Moon Island.	
350 . .	" "	" Fairfield st. .	Fairfield-st. sewer overflow (30-in. iron pipe)		Disused.	
351 . .	" "	" Dartmouth-st.,	Dartmouth-st. sewer overflow (30-in. iron pipe)		Ordinary flow goes to Moon Island.	
					Ordinary flow, except that from 3 houses, goes to Moon Island.	

Sources of Pollution of Charles River and its Tributaries, October, 1892. — Continued.

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Operatives.	Remarks.	Remarks added January, 1908.
366 . .	Boston (City Proper).	Leverett st., under Oralgie's Bridge,	Sewer overflow (2-ft. X 2-ft., wood)	Storm overflow from 2-ft. X 3-ft. brick sewer in Leverett st.		Ordinary flow goes to Moon Island.	
367 . .	"	Lowell & Brighton sts.	Sewer overflow (wood)	Storm overflow from west side Intercepting Sewer		Ordinary flow goes to Moon Island.	
368 . .	"	Behind B. & L. R.R. station . .	Two pipes from catch-basins.				
369 . .	"	Behind B. & L. R.R. station . .	Disused sewer outlet (3-ft. X 2-ft., wood).				
371 . .	"	Behind Eastern R.R. station . .	Sewer overflow (3.5-ft. X 4-ft., wood)	Storm overflow from west side Intercepting Sewer		Ordinary flow goes to Moon Island.	
372 . .	"	Behind Eastern R.R. station . .	Privy on wharf	Privy.			
374 . .	"	Under Warren Bridge	Old sewer outlet (8-ft. X 3-ft., wood)	Drainage of F. R.R. station		This old sewer is bulk-headed at Causeway st., but still drains some catch-basins and the F. R.R. station.	
375 . .	"	Bartlett's wharf .	Privy	Privy.			
376 . .	"	Fletcher's wharf .	"	"			

377 ..	"	"	Under Charles-River Bridge ..	Old sewer outlet (4-ft. X 5-ft., wood) .....	.....	.....	Bulkheaded off, but still used for street drainage.
378 ..	"	"	Under Charles-River Bridge ..	Sewer overflow (3-ft. X 3-ft., wood)	Storm overflow from 18-in. X 18-in. sewer in Prince st. ....	.....	Ordinary flow goes to Moon Island.
381 ..	"	"	Old Gas Works ..	Old sewer (4-ft.) X 5-ft., dis-used .....	.....	.....	Probably bulkheaded off.
382 ..	"	"	Opposite Hull st. ..	Old sewer outlet (2-ft. X 1-ft.), now disused.	.....	.....	
383 ..	"	"	" Charter st.,	Sewer overflow (16-in. X 24-in.), wood	Storm overflow from sewers in Charter and Commercial sts.,	.....	Ordinary flow goes to Moon Island.
385 ..	"	"	State Wharf ..	Privy	Privy.	.....	
386 ..	"	"	Bartlett's N. Wharf,	" .....	"	.....	
387 ..	"	"	Fiske's Wharf ..	4-in. drain from wharfinger's office	Drainage from water-closet.	.....	
388 ..	"	"	" ..	Sewer outlet (3-ft. X 2-ft.), disused.	.....	.....	
390 ..	"	"	Dock next north of Chelsea Ferry ..	Privy	Privy.	.....	
391 ..	"	"	Chelsea Ferry ..	Two 8-in. drains	Drainage from water-closets,	.....	
394 ..	Somerville ..		Waverly st.	Small sewer	Sewage .....	.....	Drains into a creek which connects with Miller's River

† A dagger indicates that the discharge in question will probably be diverted into the North Metropolitan Sewer soon after the latter is ready to receive sewage.

Sources of Pollution of Charles River and its Tributaries, October, 1892. — *Continued.*

Reference Number.	Town or City.	Locality.		Kind of Pollution entering Stream.	No. of Openings.	Remarks.	Remarks added January, 1900.
396 . .	Boston (Chan).	B. & M. R.R., near prison					
397 . .	"	"	Sewer overflow (4-ft. X 3-ft., wood)				
398 . .	"	B. & M. R.R., near prison	Sewer overflow (4.3-ft. X 4.3-ft., wood)			Two old sewer-overflows, probably not used now.	
399 . .	"	Eastern R.R., near round house . .	Sewer outlet (6 ft. X 6-ft., wood)				
400 . .	"	Under Prison-point Bridge	Austin-st. sewer outlet (15-in. pipe)			Discharge into Miller's River just above Prison-point Bridge. This sewer drains a large area on the west side of Charlestown.	
401 . .	"	"	B. & M. machine-shop drain (1-ft. X 1-ft., box)				
403 . .	"	Opposite Fourth st.	Sewer outlet				
404 . .	"	Under F. R. R., opposite Miller's river draw . . .	12-in. iron pipe with flap valve.				
405 . .	"	Under F. R.R. opposite Walford st.	Sewer outlet (18-in. X 24-in., wood)				
406 . .	"	Under Warren Bridge	Sewer outlet (8-ft. X 3-ft., brick)				

407 . .	"	West of Charles- river Bridge . .	Privy over dock	Privy.			+
408 . .	"	Under Charles- river Bridge . .	Sewer outlet (36-in. X 30-in., brick)	Sewage			+
409 . .	"	East of Charles- river Bridge . .	Privy over dock	Privy.			+
410 . .	"	Hoosac Docks . .	Wooden drain (18-in. X 18-in.),	Sewage			+
411 . .	"	" . .	Privy at head of Eastern Dock,	Privy.			+
412 . .	"	Opposite Gray st.,	Sewer outlet (4-ft. X 3-ft., wood)	Sewage			+
413 . .	"	Opposite Wapping st., in Navy Yard,	Sewer outlet (5. ft. X 2½ ft., wood)	"			+
414 . .	"	In Navy Yard, be- tween basins . .	Sewer outlet (3-ft. X 4-ft., wood)	"			+
416 . .	"	Navy Yard	12-in. brick sewer near ma- chine-shop	Disused.			+

† A dagger indicates that the discharge in question will probably be diverted into the North Metropolitan Sewer soon after the latter is ready to receive sewage.

Considered with reference to pollution, the Charles River may be divided into three portions: the upper river, including everything above the mouth of Boggistere Brook in Millis; the middle portion: reaching from the mouth of Boggistere Brook to the lower dam at Watertown; and the tidal portion, reaching from the Watertown Dam to Boston Harbor.

The upper portion receives considerable sewage and factory waste, in proportion to the natural flow of the stream. The middle portion, except at its very lower end, receives very little sewage, except that from the upper division of the river. The tidal portion receives a great proportion of sewage, even considering the tidal water with which it is twice a day flushed. The bed and banks of this portion are very foul, and in some places are offensive to both sight and smell.

Starting at Milford, the upper division of the river is bordered by Hopedale, Bellingham, Franklin, Medway, Norfolk, Millis, and Medfield. In Franklin it receives the waters of Mine Brook and in Norfolk of Mill River. In Medfield Stop River, and in Millis, Boggistere Brook enter the main stream, coming from Norfolk and Holliston respectively. This division of the river receives, directly or through its tributaries, manufacturing waste from twenty-four establishments, at eight of which wool is scoured. It receives, also, the day sewage of about 1,938 operatives, and the domestic sewage of a number of families, besides the discharge from two sewers at Milford. The water, in several places where the total flow is small, notably in Boggistere Brook at East Holliston, in Mine Brook at Franklin, and in the main river at Milford, is quite foul. But, diluted by frequent accessions of clean water, the appearance of the stream becomes very much improved as it approaches the mouth of Boggistere Brook, the head of the second division.

As it flows thence, bordered by Sherborn, Dover, Natick, the southern end of Wellesley, Needham, Dedham, West Roxbury, and Newton, the stream receives but little sewage and hardly any factory waste until it reaches the mouth of Rosemary Brook in Wellesley, from which brook it receives the day sewage of about 180 operatives in the Union Cycle Works at Highlandville in Needham. At the Lower Falls in the north-eastern part of Wellesley it receives waste from a hosiery mill, a paper mill, and a shoddy mill, and the day sewage of about 193 operatives. A little factory waste comes from the Newton side at this point. Weston contributes but little that is objectionable. In October, when the examination was made, Waltham, Watertown, and the

northern part of Newton discharged into the river a large amount of offensive factory-waste, the day sewage of about 5,400 operatives, and the domestic sewage of about 93 families; but a large part of the discharge from Watertown, Waltham, and Newton has since been diverted into the South Metropolitan Sewer.

The middle division of the river does not appear to be offensive to sight and smell, except between Waltham and Watertown. Above Waltham the water, though brownish in color, does not look unclean, and analyses reported by the State Board of Health show that it is not very foul. The offensiveness complained of above the dam at Watertown must therefore be due principally to the sewage and factory waste received from Waltham, Watertown, and the northern part of Newton, and when this discharge has been entirely diverted into the Metropolitan Sewer, as it soon will be, and any existing deposits of filth have been removed from the river, the nuisance above the dam will probably be abated, so that the entire middle division of the river will be inoffensive to the senses.

Needham, Dedham, Brookline, Newton, Wellesley, Waltham, Watertown, and Belmont take their water supplies from filter basins, filter galleries, or large wells on or near the banks of this portion of the Charles. These supplies, except that of Needham, are probably subject at times to the percolation of river water. The works of Dedham, Brookline, and Newton have also a direct connection with the river, and the Wellesley works, with Rosemary Brook, for use in emergencies. The aggregate population of the cities and towns which are supplied with ground water from the banks of the middle portion of the Charles is about 75,000. Ice is cut on the river at Waltham, and at Cow Island in West Roxbury.¹

The tidal portion of the river received in October from Watertown considerable factory and water-closet drainage; from Brighton the whole sewage of about 6,500 people and the drainage of the Abattoir, the Tripe Works, and a wool-washing establishment; from Cambridge the sewage of nearly the whole population and that of a part of Somer-

¹ NOTE. — Other water-supplies taken from the Charles River water-shed are as follows: Milford and Hopedale are supplied from three wells on the banks of the Charles above all sources of pollution. Holliston takes its water from a well near an uncontaminated pond on a branch of Boggistere Brook, and Concord from Sandy Pond in Lincoln, at the head-waters of the Weston Stony Brook. Cambridge has built a storage basin on Stony Brook near its junction with the Charles. All the foregoing are probably free from pollution. Franklin's supply comes from a well near Mine Brook below the village, where the brook is certainly contaminated. Ice is cut on Cedar Swamp Pond in Milford, which is contaminated by drainage from several dwellings.

ville, besides the drainage of North's and Squire's pork-packing houses. Charlestown contributed the sewage of about 19,100 people; Boston proper that of, perhaps, 200 families; and Roxbury and West Roxbury the sewage of 150 families, considerable sink-drainage, and a little factory-waste.

Since October a part of the Watertown and Brighton sewage has been diverted into the Metropolitan Sewer, and nearly all the rest, including the Abattoir drainage, will probably be diverted before the summer of 1893. Boston is taking measures to put an end to nearly all the pollution which comes from the south bank of the river, but the sewage of Cambridge, Somerville, and Charlestown cannot be diverted until the North Metropolitan Sewer is ready to receive it.

The amount of sewage discharged into Charles River from two of the Cambridge sewers, between Craigie's Bridge and the West Boston Bridge, is probably as great as the sum of all discharges of sewage or other filth into the whole river above the latter point, but the volume of salt water with which it is diluted is so very great that the river between these bridges does not seem to be so foul as at other points on the tidal stream where the discharge of sewage and the volume of tidal water are both less. The most offensive place seems to be at the North Beacon-st. Bridge just above the Brighton Abattoir and one of the Brighton sewers, though above and below the North Harvard-st. Bridge it is nearly as foul.

The filth in the bed of the river between the bridge at the Arsenal and the Watertown Dam is probably for the most part sewage and refuse brought up by the tide from the Brighton and Old Cambridge sewers, and from the Brighton Abattoir, and deposited at slack water. This deposition of filth may be expected to diminish when the Brighton sewage and the Abattoir drainage are diverted into the Metropolitan, and to diminish still further when the Cambridge sewage is diverted.

The surface of the water between Cambridge and Boston is made unsightly by floating rubbish consisting of chips, shavings, and small sticks, grass, paper, manure, dead animals, and the like. A part of this rubbish is probably unavoidably blown into the river, a part is thrown over-board from vessels, but the greater part of it probably comes from the numerous public and private dumps on the banks of the river, and on the adjoining marshes. The dumps at the rear of the Abattoir are especially objectionable on account of the temptation they offer for easily getting rid of very foul refuse.

A large part of the rain water which falls on the streets of Boston goes into the common sewers, and when the volume

of water becomes too great to be taken care of by the intercepting sewers, the surplus is discharged into tide water by means of the "storm overflows;" the street wash itself is sometimes very muddy, and it takes with it the sewage with which it has become mixed.

Cambridge and Charlestown, being also sewered on the "combined" system, will have to adopt a like system of overflows when they make connection with the Metropolitan Sewer. Therefore, even after the completion of the Metropolitan system, heavy storms must still produce some discoloration and pollution of the water in the Charles-river basin.

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